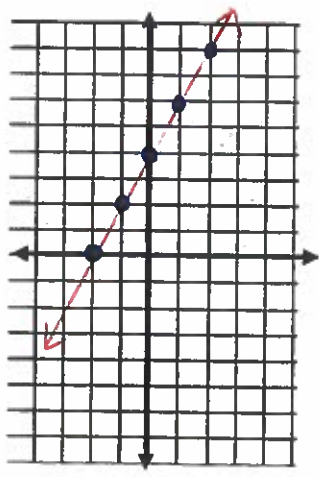# Lesson 4-4 Graphing a Function Rule

Graph each function rule. Complete function table and graph
Linear: straight line, no exponents in equation
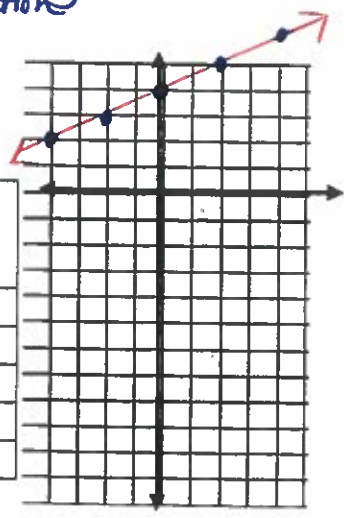
A. $y = 2x + 4$

B. $y = \frac{1}{2}x + 4$

x	2x + 4	y
-2	2(-2)+4	0
-1	2(-1)+4	2
0	2(0)+4	4
1	2(1)+4	6
2	2(2)+4	8

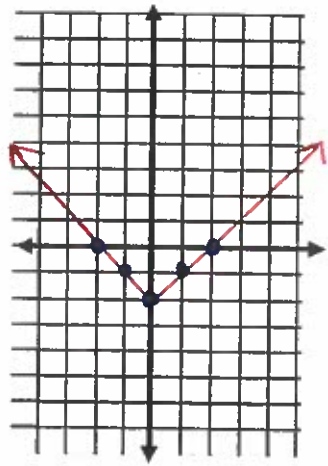| x	½x +4	y
-4	½(-4)+4	2
-2	½(-2)+4	3
0	½(0)+4	4
2	½(2)+4	5
4	½(4)+4	6

(choose #'s that a multiples of 2)

absolute value: v-shaped

C. $y = |x| - 2$

Quadratic: u-shaped

D. $y = -x^2 + 2$

x	$|x| - 2$	y
-2	|-2|-2	0
-1	|-1|-2	-1
0	|0|-2	-2
1	|1|-2	-1
2	|2|-2	0

x	$-x^2 + 2$	y
-2	-(-2)²+2	-2
-1	-(-1)²+2	+1
0	-(0)²+2	2
1	-1²+2	1
2	-2²+2	-2
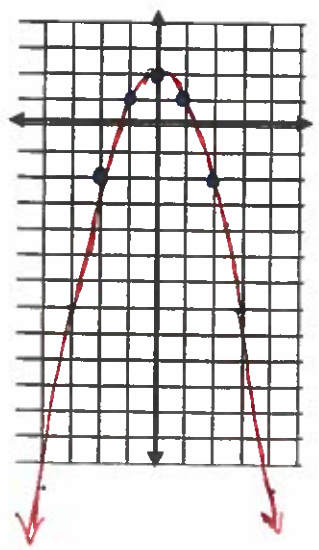
A **continuous** graph is a graph that is unbroken. A **discrete** graph is composed of distinct isolated points.

E. The number of bagels **b** remaining in a dozen depends on the number **s** that have been sold.

F. The amount of gas **g** remaining in the tank of a gas grill depends on the amount of time **t** the grill has been used.

Note: When graphing quadratic and absolute value functions, you must find the vertex ("turn around" point)

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PRACTICE

Try these on your own

Make a table of values for each function. Then graph each function rule.

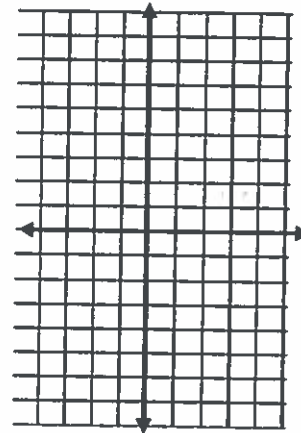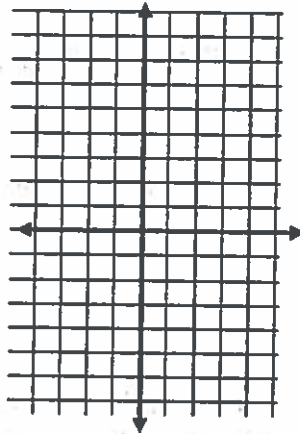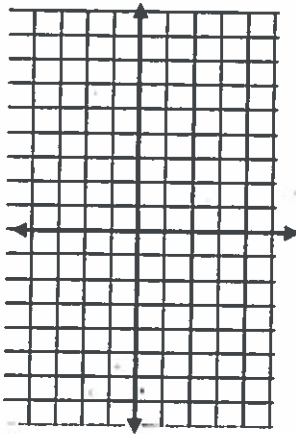**1.** $y = -x + 3$

2. $y = \dfrac{1}{4}x$

3. $y = 5x - 2$

x	−x + 3	y
-2		
-1		
0		
1		
2		

x	¼ x	y
-4		
-2		
0		
2		
4		

| x	· 5x − 2	y
-2		
-1		
0		
1		
2		

Graph each function rule. Explain your choice of intervals on the axes of the graph. Tell whether the graph is *continuous* or *discrete*.

4. The cost d, in dollars, for a parking pass depends on the number of whole weeks w you purchase. This situation is represented by the function rule $d = 25w$.
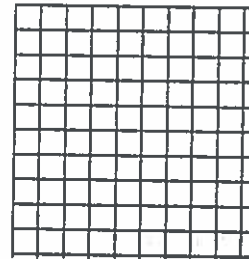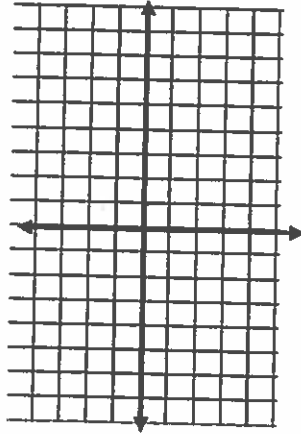
5. The price p, in dollars, for apples depends on the weight w, in pounds, of the apples. This situation is represented by the function rule $p = 1.99w$.
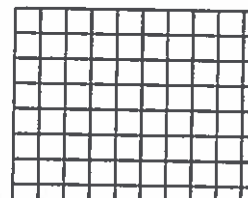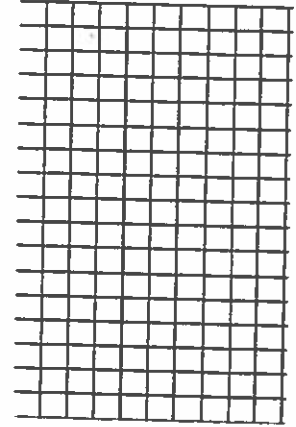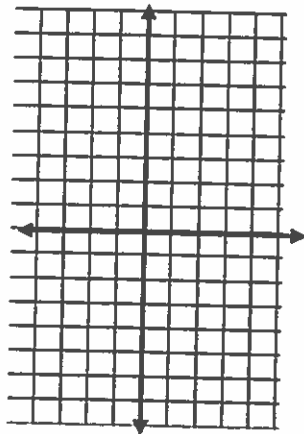
Graph each function rule.

6. $y = |x| + 3$

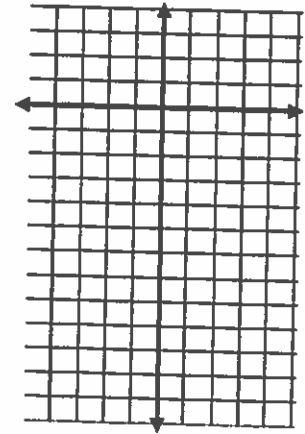| x	$|x| + 3$	y

7. $y = -3x^2$

x	$-3x^2$	y

8. $y = |x - 2| + 3$

x	$|x - 2| + 3$	y

9. $y = -x^2 - 2$

x	$-x^2 - 2$	y

10. **Writing** Describe the general shape of the function $y = |x|$.

10. **Writing** Describe the general shape of a quadratic function.

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